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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/762,631	04/16/2001	Meng Wang	1556.0270000	6576

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EXAMINER

JOHNSON, TIMOTHY M

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 03/29/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/762,631

Applicant(s)

WANG ET AL.

Examiner

Timothy M Johnson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Disclosure

1. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said", should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns, " "The disclosure defined by this invention," "The disclosure describes," etc.

2. The abstract of the disclosure is objected to because the abstract is missing. See MPEP 608.01 (b) as it recites 37 CFR 1.72 and the paragraph "Language and Format". Correction is required.

3. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered **consecutively** beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claims 6-12 been renumbered 5-11 respectively.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For claim 11, line 3, "the bitstream header" lacks antecedent basis.

For claim 11, line 4, "the initial threshold" and "the array" lacks antecedent basis.

For claim 11, line 6, "the significance maps" lacks antecedent basis.

For claim 11, line 7, "the significance lists" and "the refinement bits" lacks antecedent basis.

For claim 11, line 10, "the inverse wavelet transform" lacks antecedent basis.

For claim 11, line 11, "the image" lacks antecedent basis.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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7. Claims 1-4 and 6-9 are rejected under 35 U.S.C. § 102(b) as being anticipated by Shapiro, Embedded Image Coding Using Zerotrees of Wavelet Coefficients.

For claim 6, an apparatus for encoding and decoding of digital still images that produces a scalable, content accessible compressed bitstream is provided by at least rate-distortion scalability so that a bitrate can be met exactly as noted in section I.A on page 3445 of Shapiro, and where the content is ordered by importance, and can be used in such applications involving content accessibility including not only the decoder, but also applications listed by Shapiro in the Introduction I on page 3445. A means of decomposing and ordering the raw image data into a hierarchy of multi-resolution sub-images is provided by Shapiro in at least the first full paragraph in section II.C on page 3447, where scale indicates a particular resolution. Means for setting an initial threshold of significance and creating a significance index is provided by Shapiro in at least the first three paragraphs in section IV.A on page 3453. Determining an initial list of insignificant blocks is provided by Shapiro in at least section III.B on page 3450, where insignificant data corresponds to square spatial areas and/or regions, i.e. blocks, and as shown in at least Figs. 4-5 on page 3450, and further in at least the first three full paragraphs in section IV.A on page 3453 and the first three full paragraphs in section IV.D on page 3455, where the data as noted above corresponds to blocks, which are listed as insignificant, and another list provides for significant coefficients. Means of forming the list of significant coefficients by encoding a significant map using a quadtree representation is provided by Shapiro where cited above, and the first full paragraph and Figs. 1-2 in section II.C on page 3447, and the first five full paragraphs in section

III.B on page 3449 and Figs. 4-6 on page 3450. Means of recursively reducing the threshold values and repeating the encoding process for each threshold value and transmitting refinement bits of significant coefficients is provided by Shapiro in at least the first five full paragraphs in section IV.A on page 3453, and the Introduction explicitly recites transmission, and is considered shown as an output bitstream in at least Fig. 3 on page 3448.

For claim 7, the apparatus defined in claim 6, wherein the hierarchy of multi-resolution sub-images are composed using a wavelet transformation is provided by Shapiro in at least the abstract.

For claim 8, the apparatus defined in claim 6, wherein the hierarchy of multi-resolution sub-images are composed using a Fourier-based transformation is provided by Shapiro in at least section III.D on page 3452, where Shapiro notes that other subband configurations are possible and recites that "a similar approach can be applied to linearly spaced subband decompositions, such as the DCT", where the DCT is the real part of the Fourier transform, and is therefore "Fourier-based" as claimed.

For claim 9, the apparatus defined in claim 6, wherein the hierarchy of multi-resolution sub-images are composed using raw image data is provided by Shapiro by using raw photographs such as in at least Fig. 9(a) on page 3458 and Fig. 11(a) on page 3461.

For claim 1, see the rejection of at least claim 6.

For claim 2, see the rejection of at least claim 7.

For claim 3, see the rejection of at least claim 8.

For claim 4, see the rejection of at least claim 9.

8. Claim 11 is rejected under 35 U.S.C. § 102(b) as being anticipated by Shapiro, 5,563,960.

For claim 11, a method of decoding digital still images to produce a scalable, content accessible compressed bitstream comprising the steps is provided by Shapiro ('960) by the scalability of the hierarchical wavelet transform, the bitrate/budget control, and the scalable content coding region selection of Shapiro in at least the second full paragraph in c. 6, c. 1, lines 15-20, c. 2, lines 40-53, and c. 3, lines 43-49. Decoding the bitstream header is provided by Shapiro ('960) in at least the last full paragraph in c. 2. Determining the initial threshold values and the array of initial significant pixels, insignificant bits and wavelet coefficients is provided by Shapiro ('960) in at least the first, second, and last full paragraphs in c. 11. Decoding the significance maps is provided by Shapiro ('960) in at least the last full paragraph in c. 11, the first and second full paragraphs in c. 12, the paragraph bridging cols. 1-13, the first full paragraph in c. 13 for example, and the second full paragraph in c. 2. Modifying the significance lists and decoding the refinement bits for each threshold level is provided by Shapiro ('960) in at least the second and third full paragraphs in c. 13. Reconstruct the wavelet

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coefficient array; perform the inverse wavelet transform; and reconstruct the image is

provided by Shapiro ('960) in at least the second and third full paragraphs in c. 11.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 5 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shapiro, Embedded Image Coding Using Zerotrees of Wavelet Coefficients, as applied to claims above, and further in view of Chiang et al., 6,553,072.

For claim 10, enabling both the encoder and the decoder to selectively and interactively control the bit budget and the quality of the compressed images is provided by Shapiro in at least section I.A on page 3445, where both the coder and decoder can control the bitrate of the bitstream, and therefore the quality, and bit budget is explicitly provided by Shapiro in at least the paragraph bridging pages 3450-3451, and the paragraph bridging pages 3453-3454. A multiplexing means that assembles the compressed data from different region and resolution channels into an integrated bitstream is not explicitly recited by Shapiro, but can be considered provided, since the wavelet transform divides the image into spatial region resolution channels as taught by Shapiro in at least section II starting on page 3446. In any case, having a multiplexer

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assembling compressed data from different region and resolution channels is clearly provided by Chiang in at least the last full paragraph in c. 6, where such as multiplexer for the selection of hierarchical information can be used with the hierarchical data stream of Shapiro for selecting different quality. It would've been obvious to one having ordinary skill in the art at the time the invention was made to use a multiplexer with Shapiro, as taught by Chiang, since Chiang provide for optimizing the coder and decoder for a desired bandwidth and for adaptive control of the hierarchical layers based on a number of parameters in c. 1, line 56 – c. 2, line 14, and the paragraph bridging cols. 2-3.

For claim 5, see the rejection of at least claim 10.

Citation of Relevant Prior art

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following references are being cited, since they were not noted in an Information Disclosure Statement (IDS), but accompanied the file wrapper, and were listed on the International Search Report:

Pearlman et al., 5,764,807 –Provides for quadtree subband decomposition and using three different lists to determine significance of pixels in at least the abstract and the paragraph bridging cols. 4-5. A refinement phase is also performed as noted in the last full paragraph in c. 5 and the first full paragraph in c. 8 for the decoder.

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Gijbels et al., An ASIC-architecture for VLSI-implementation of the RBN-algorithm.

Compresses image data using quadtree information, predicted pixel corner information, and Block Truncation Coding (BTC) bitplanes as noted in the last full paragraph of section 2.1 on page 409. This reference does not appear to teach at least any of the lists claimed, a significance map recursion, nor refinement processing.

Banham et al., A Wavelet Transform Image Coding Technique With A Quadtree Structure. Codes wavelet transform coefficients using a quadtree structure as noted in at least the abstract. Other than showing the conventional and well known relationship between blocks and wavelet transform coefficients in section 2.2 on page IV-654, there is little similarities between this reference and Applicant's claims. Therefore, this reference is very likely not an "X" reference as categorized in the International Search Report.

Wang et al., WO 00/10131. The priority document on which the instant application is based. Not listed on the International Search Report.

Contact Information

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy M Johnson whose telephone number is 703-306-3096. The examiner can normally be reached on Monday – Friday from 5:30 to 2:00.

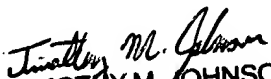
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh M. Mehta, can be reached on Monday – Friday from 9:30 to 5:00.

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The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Timothy M. Johnson
Patent Examiner
Art Unit 2625
March 13, 2004


TIMOTHY M. JOHNSON
PRIMARY EXAMINER